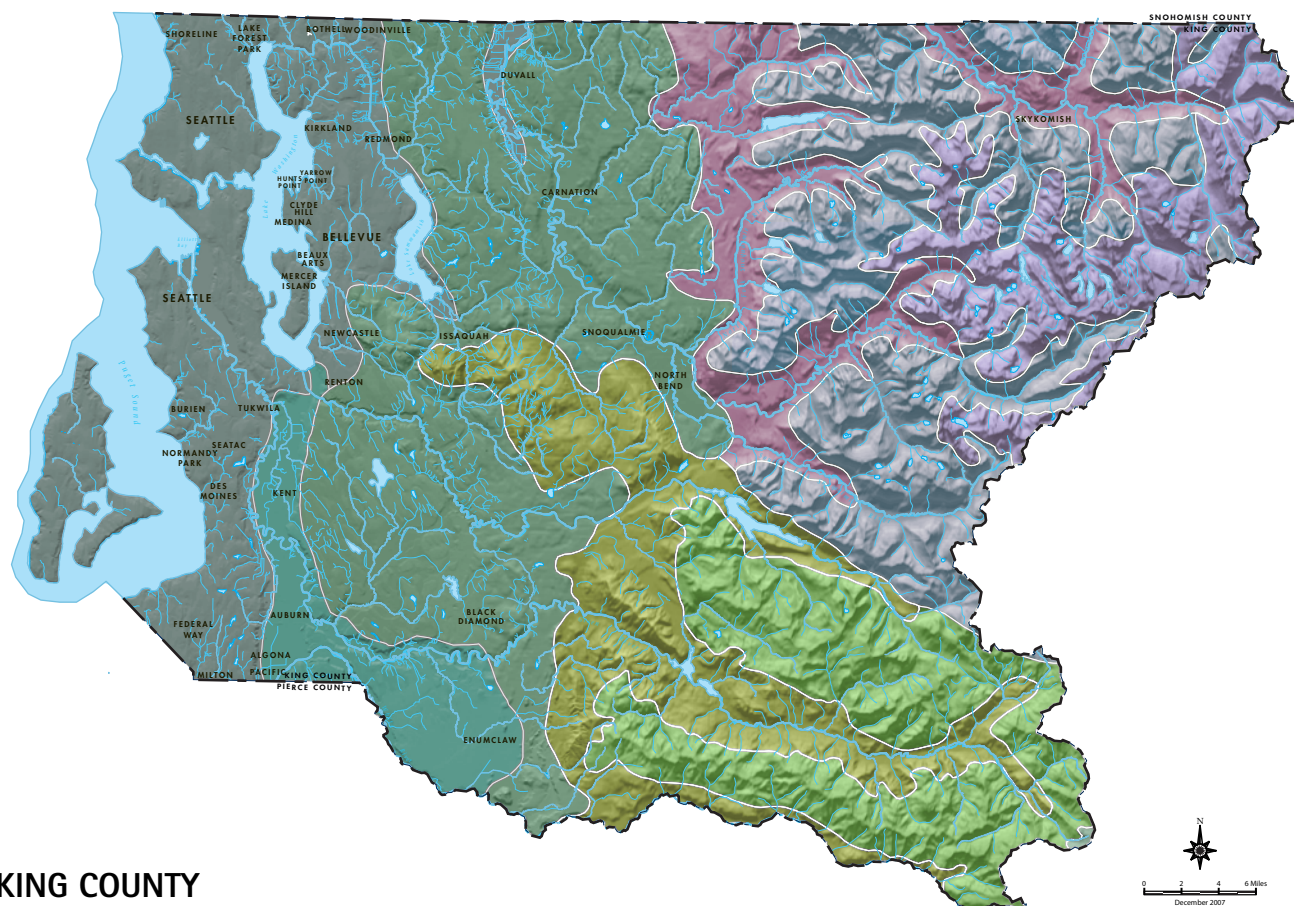


EXECUTIVE SUMMARY



KING COUNTY Level IV Ecoregions

	Central Puget Lowland		North Cascades Highland Forests		Western Cascades Lowlands and Valleys
	Eastern Puget Riverine Lowlands		North Cascades Lowland Forests		Western Cascades Montane Highlands
	Eastern Puget Uplands		North Cascades Subalpine/Alpine		Cascade Subalpine/Alpine

King County is the most populous county in the State of Washington and the 12th most populous county in the United States. The 2005 census estimate put King County's population at 1,793,583, a population density of nearly 325/km². King County is the 11th largest county in Washington with a total area of nearly 6,000 square kilometers (2,300 sq. miles), of which about 470 km² is water. The county is located about midway between Canada to the north and Oregon to the south and extends from the shore of Puget Sound eastward to the crest of the Cascade Mountains. Seattle is the largest city in King County, and 38 other towns and cities lie within King County as well.

King County is geographically quite diverse. Its eastern boundary follows the divide of the Cascade Mountains

for some 60 miles (100 km) north to south. Some of the highest peaks in the range are found in the northern section of the divide, among them Mt. Daniel (2426 meters/7,960 feet), Mt. Hinman (2284 meters/7492 feet), Summit Chief (2276 meters/7464 feet), and Overcoat Peak (2266 meters/7432 feet). Some 60 miles to the west, the County borders on the Puget Sound, a fjord-like body of saltwater between the Olympic Mountains to the west and the Puget Lowlands to the east. The Sound occupies a long, north-south trending trough that was carved by the action of multiple glacial advances and retreats, the last of which occurred between 12,000 and 15,000 years BP (before present). This glacial action also left behind a series of long, low gravel ridges across the lowlands, numerous kettle lakes, two large lakes (Lake Washington and Lake Sammamish, the largest and 5th

largest natural lakes in Washington, respectively), Mercer Island in southern Lake Washington, and Vashon-Maury Island, about 3 miles offshore of mainland King County.

WHAT DO WE MEAN BY "BIODIVERSITY"?

Biodiversity is defined as the variety of living organisms considered at all levels, from genetic diversity through species, to higher taxonomic levels, and includes the variety of habitats, ecosystems, and landscapes in which the species are found.

The diversity of geography combined with the county's history of land use has shaped the biodiversity of the past, present, and will continue affecting it into the future. This executive summary summarizes the rich landscape of King County and describes the state of biodiversity in King County.

KING COUNTY'S HISTORY OF LAND USE AND CONSERVATION

The lands that now comprise King County have been home to Native Americans for several thousand years. The indigenous peoples were well established in major river valleys and along the shores of Puget Sound when the first explorers visited the area in the 16th century. Salmon fishing, hunting, gathering shellfish, sealing, firing woodlands and prairies to promote the growth of huckleberry and camas, the use of cedar for building and cedarbark for weaving—all were activities carried out by the native peoples who dwelt here. Although the native peoples did manipulate the landscape to favor certain valuable species, little is known about the overall effect on native biodiversity of these inhabitants and their activities, except in the rare cases of some remaining fire-altered woodlands and prairies, most of which have been overgrown as these activities ceased.

First settled by Euro-Americans in the 1850s, King County grew rapidly, keeping pace with the growth of Seattle. Throughout Puget Sound, timber was the primary industry. By 1900, the King County lowlands and the lowland river valleys were being logged rapidly. The Green River Valley of King County was one of the first

lowland valleys to be cut over using the new techniques of clear-cutting and patch cutting; the lower and middle valley for 48 kilometers (30 miles) had been almost completely cut by 1920. Following a depression in the 1890s, the area was revitalized by the Klondike gold rush just before the turn of the 20th Century as Seattle became the hub for prospectors heading north and for some who struck it rich on their way back from the Yukon. King County was gaining in population quite rapidly during this time, its population rising from 110,000 in 1900 to over 284,000 by 1910.

The 1920s saw an overall decline in the local forest products industry as national markets grew smaller in post-war years and easily accessed timber reserves were being depleted. As the importance of the timber industry in King County declined, agriculture was gaining prominence and King County farms, many located in the fertile river valley of the Green, were a mainstay of Washington State's farm production. The end of WW II saw a second wave of immigration to King County, and this time land development accelerated in the uplands to the east of Seattle (the suburbs). Once again, lumber mills in the area geared up for production during the war, and post-war suburban growth helped keep production going into the 1950s. This boom also passed and only a few mills remained in King County by the



Some 70 million acres of commercial forest land once covered the Pacific Northwest. Large Douglas firs, spruce, hemlock, and cedar trees grew west of the Cascade Range. Some firs grew over 300 feet tall, and some cedars reached 15 feet in diameter. In 1905, there were 189 lumber companies in King County alone, employing nearly 8,000 people. By 1910, Washington was the nation's largest lumber-producing state, and the industry employed almost two-thirds of the state's wage earners. Photo: Museum of History and Industry, Seattle. (SHS 935).



The salmon canning industry started in the late 1860s along the Columbia River. By the 1890s, the fishing ground and market had shifted to Puget Sound. Seattle was the home base of the salmon fishing fleet for many years. In this photo, taken around 1900, workers unload salmon from barges at a Seattle cannery wharf south of downtown. Photo: Museum of History and Industry (SHS 10,593).

1970s. The Snoqualmie mill, one of the last facilities in the region capable of cutting large old growth logs, was closed in 1989.

Largely because of the pressures of an expanding population and the pace of land development, the preservation of open space and farmlands in King County became an issue in the 1970s. In 1979, voters overwhelmingly approved the King County Farmlands Preservation Bond issue. Under this program, the first purchase of farmland development rights by the County took place in January 1984. Over US\$ 50 million in development rights were purchased at that time. In 1989 King County voters approved a major open space bond issue that provided more funds for the purchase of recreation and resource lands around King County. Additional monies since then have added to the growing public ownership of parklands, open spaces, wildlife habitats, and other resource lands. Again in the late 1990s, an acquisition program focused on riparian lands, the Waterways Program, added to the growing inventory of ecological lands in public ownership. We continue to acquire several hundred acres of ecologically significant lands per year, using salmon recovery funding, conservation futures, and a variety of other funding sources. To date, the County inventory of ecological lands exceeds 2,400 hectares (6,000 acres). These County lands are complemented by a variety of other ecological lands including

60,348 hectares (149,125 acres) of Federal wilderness area, 5221 hectares (9325.3 acres) of State lands in Natural Area Preserves, Conservation Areas, and a state park managed for its old growth forest, and 36,622 hectares (90,500 acres) of the Cedar River Watershed, which is managed as an ecological reserve.

WHAT DOES KING COUNTY'S BIODIVERSITY INCLUDE?

Because of its size, topography, and geology, the diversity of landscapes and habitats in King County is dramatic. From the imposing presence of the Cascade Mountains to rare and sensitive lowland bogs, King County possesses an astonishing array of landforms and habitats. The diversity of inhabitants is no less remarkable. Approximately 220 species of breeding and non-breeding birds are usually seen on an annual basis in King County. Based on an analysis by the State of Washington, 69 species of mammals, 12 species of amphibians, and 8 species of reptile are thought to be breeding in the county. About 50 species of native fish (and 20 species of introduced fish) are found in the freshwater streams, rivers, ponds, and lakes of King County. In the County's marine environment, over 200 species of fish, some 500 species of invertebrate animals, and 8 species of marine mammals can be found. And an astounding 1,249 (383 introduced) species of vascular plants have been identified in the county. The characteristics of their habitats and ecosystems are summarized here. More detail about individual species may be found in the main body of the report.

Our "working" definition of biodiversity generally focuses on the intermediate levels of ecological organization and at intermediate spatial scales: mainly on habitat and species levels of biodiversity because these levels are more practical to protect and manage for a local jurisdiction. Describing only those levels of biodiversity would hardly be an adequate characterization, however. To adequately describe the breadth of biodiversity in the County—and to be true to the scientific definition of biodiversity—we must consider large, intermediate, and small scales of ecological and biological organization, from landscape diversity to genetic diversity.

THE LANDSCAPES, ECOSYSTEMS, AND HABITATS, OF KING COUNTY

Three ecoregions cover parts of King County: the Puget Lowland Ecoregion in the western half of the County, the North Cascades Ecoregion in the north eastern and east central portion, and the Cascades Ecoregion in the south eastern portion of the County. Ecoregions are the largest units (in area) of biodiversity in King County. Within each of these large regional types, nine smaller ecoregion types are nested that reflect a more refined set of ecological parameters. And within each of these nine smaller ecoregions are nested various habitats and, finally, plant and animal species. Not captured in these eco-regions is the Puget Sound marine environment that forms the County's western border. In this shoreland and open water ecosystem can be found backshore habitats, intertidal and subtidal habitats, estuarine habitats, and the open water of the pelagic zone.

The Puget Lowland Ecoregion



Much of King County's waterfront is developed. The City of Seattle, King County's county seat, is bounded by Elliott Bay to the west and Lake Washington to the east.

The Puget Lowland Ecoregion of King County, including its component Central Puget Lowland sub-ecoregion, or subregion, Eastern Puget Riverine Lowland subregion, and Eastern Puget Upland subregion, comprises the largest ecoregion in King County, covering an area of some 2300 km², over a third of the County's total land area. The Puget Lowland has undergone the greatest change since settlement, and this landscape is where overall biodiversity has declined the most. This ecoregion was the first to be logged, the first to

be turned to agriculture, and has borne the brunt of encroaching settlement and urbanization. The lowlands of King County, from the shores of Puget Sound to the uplands and foothills of the Cascades, were once continuous forests of Western hemlock, Western Redcedar, and Douglas-fir that have largely been replaced with forest plantations, farms and fields, cities, towns, and their suburbs.

The Central Puget Lowland subregion was once an area of small streams, abundant wetlands, and almost complete coniferous forest cover, and is now entirely dominated by urban and suburban land uses. This subregion contains the two largest lakes in King County: Lake Washington and Lake Sammamish, both of which are surrounded by residential development; many homes have been built on the lakeshore. Over the last century, lake levels have been lowered, shorelines altered and, in the case of Lake Washington, its original outlet has been completely abandoned and a new outlet created, some 10 miles from the original.

The Riverine Lowland subregion contains the lower portions of three major river valleys of the county, which were among the first to be logged and converted to agriculture. Each has been tapped for either water supply or power generation, and two of the three have been dammed to control flooding. Nevertheless, considerable diversity of habitats and species remains. Riparian forests of mature cottonwood can be found along some reaches of all the rivers—these trees provide resting perches for migrating songbirds; the shallows still provide habitat for several species of freshwater molluscs, a group underrepresented in the fauna of the entire Pacific Northwest; and deep, cold pools harbour salmon fry and trout. The rivers and streams of this subregion were, and still remain, the major spawning and rearing areas for the native species of Pacific Salmon and trout that occur in King County. Of this group, three species (Chinook salmon, bull trout, a char, and steelhead trout) have been listed recently under the U.S. Endangered Species Act and are the subject of region-wide recovery efforts.

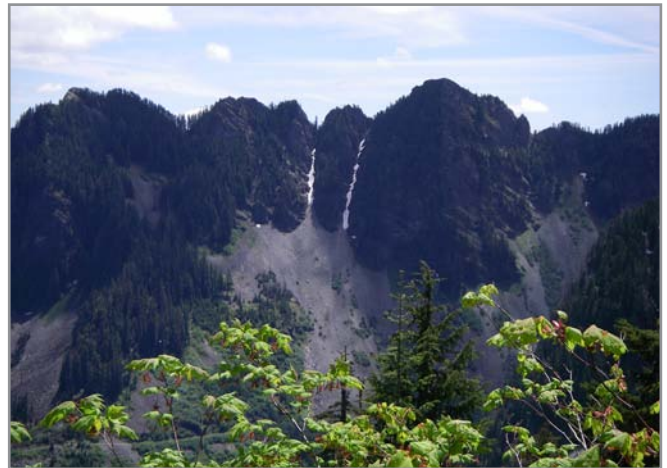
The Eastern Puget Upland is considered an ecological transition zone that extends from the Puget lowlands to the highland forests on the western slope of the Cascade

Mountains. This subregion is a transition zone for land use as well because the intensity of settlement declines from west to east across the subregion. From its western edge, newly created cities and their suburbs gradually give way to farming areas, woodlots and forests, a few small towns and, finally, to the current forest production zone on the highlands and in the rising foothills. This area remains prominent in the production of forest products and includes extensive private forest lands, two state forests, and the western edge of federal forest lands.

It is in this subregion that much of the County's land acquisition and protection is directed. This is an area of complex landforms, small kettle lakes, open and forested wetlands, and bears the imprint of forestry and agriculture. The Eastern Puget Upland possesses the most habitat and species diversity, partly because of the complexity of landforms and partly because of the patchiness of the landscape that is the result of human alteration. Small forest patches and woodlots, pastures and abandoned fields, hedgerows and windbreaks, even parks and rural roadsides create a bewildering variety of small habitats. Many bird species use these habitats for feeding, some for nesting, others for resting as they make their way north. These habitats are predominantly edges where species from adjacent, more homogeneous habitats mingle.

The species diversity of the Lowlands is much higher than is expected given the altered condition of the landscape, although these fragmented habitats tend to possess the highest numbers of non-native species. For some species—those that require larger, unbroken forest or some isolation for nesting—these habitats are not suitable. For the most part, the plant species list for this area is dominated by non-native, introduced species that have been brought in for landscaping, gardening, or for some no-longer remembered economic reason.

The North Cascades Ecoregion



Rocky cliffs and talus slopes are habitat types found in the foothills and mountains of King County. Photo: Jennifer Vanderhoof.

From the Puget Ecoregion, we move upslope into the North Cascades Ecoregion and its three component subregions: North Cascade Lowland Forests, North Cascade Highland Forests, and the North Cascades subalpine/alpine. Together, these subregions comprise approximately 1,838 square kilometers (656 square miles) and extend from about 244 meters (800 feet) ASL in the river bottoms to over 2,258 meters (7,000 feet) at the Cascade crest. Within this ecoregion is the least altered of all the landscapes in King County—the subalpine/alpine, which remains the least altered partly because of the ruggedness and inaccessibility of the terrain and partly because of the lack of resources of great economic value to the first settlers of the county. The area is not without change, but the most significant alterations have occurred in the North Cascade Lowland Forests and in the river valleys that lie within that subregion.

The Lowland Forests are the lowest (in elevation) extension of the North Cascade Ecoregion and encompass the upslope valleys of King County's major river systems: the Skykomish River Valley in the northeast, the Tolt River Valley in the north, and the three forks of the Snoqualmie (North, Middle, and South) in eastern King County. Of these, the Skykomish lowland forests penetrate farthest to the east, approaching within a few miles of the Cascade Crest. These are deeply cut valleys for the most part, and it is possible to traverse from the river bottom to subalpine heights on a single slope. In doing so, one would walk from lush forests of the river

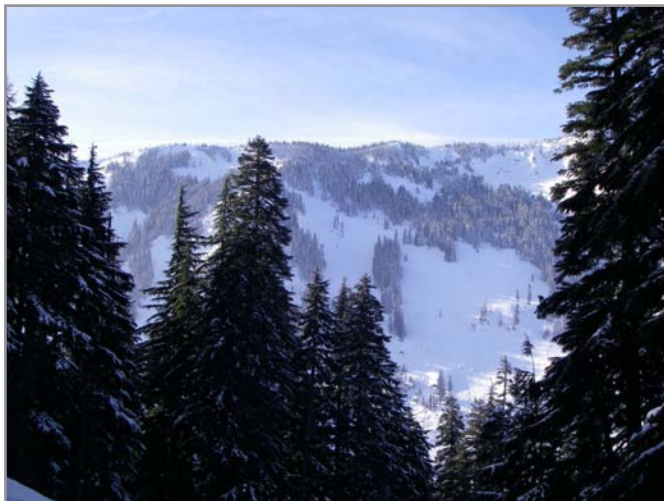
bottom through several plant communities in a relatively short horizontal distance. In the river bottoms, the lowland forests of western hemlock, western redcedar, and Douglas-fir were historically dominant—large trees with dense canopies that kept the river bottoms cool and moist. These forests were the focus of much logging in the late 19th and early 20th centuries and had been mostly logged off by the end of WWI. As logging operations ceased in these valleys, the lands were left to regenerate. These forests grow quickly in the valley bottoms but the new stands are little like the old and complex forests that once stood here. Still, the new forests are gaining in age and structure as they are left to re-grow or are newly managed for ecological benefits as well as commodity value. It is in this ecoregion that the relationship among forests, rivers, and Pacific salmon reaches a zenith. Salmon diversity is generally highest in the accessible rivers of this subregion. Habitats are complex and abundant—owing much to the streamside forests that are sources of food and the large wood that forms abundant pools and gravel beds. Much of the wood that finds its way to lower rivers and into our coastal estuaries originates in this subregion and is delivered by floods to the lower reaches of rivers and to the marine shores.

The Highland Forest is the heart of the Pacific Silver Fir (PSF) zone, and the namesake species may occur in almost monotypic stands at mid-elevations. In the upper reaches of this zone, Pacific Silver Fir often blends with Alaskan cedar, mountain hemlock, and even subalpine fir. This subregion was one of the last remaining timber-producing areas within King County until the late 1970s. With the growth of population in the lowlands to the west, the forest has lately become a major recreational destination. The terrain of the highland forest is often very steep and, coupled with deep snowfall, makes for severe snowpack instability on some western slopes. These areas are known as avalanche tracks and are easily seen as long, vertical strips of shrubs and other non-tree vegetation. This pattern makes for considerable diversity amid the forest stands and the tracks are feeding grounds for a variety of subalpine and highland animals.

The dramatic landscapes of the North Cascade subalpine/alpine of King County are the work of continental and alpine glaciers. This area comprises the least disturbed landscape in the County. However, human influence and effect is present here too: old mining claims, most now abandoned or unworked, dot the alpine landscape, and the area is used heavily for recreation by the citizens of King County and Puget Sound, indeed, visitors from around the world. Most of the subalpine and alpine landscape is contained within two wilderness areas: the Alpine Lakes Wilderness in east central King County and the Henry M. Jackson Wilderness in the far northeast corner of the county. The Alpine Lakes Wilderness is a landscape of small mountain lakes nestled among the high rock peaks and timbered valleys of the region. Approximately 500 of these small lakes are found in King County. Over half of Washington State's population lives within a one-hour drive of the Wilderness. With nearly 150,000 visitors each year, the wilderness areas have suffered considerable damage in many accessible areas.

The subalpine zone is dominated by mountain hemlock, which extends from the Pacific Silver Fir-dominated zone to timberline. The species is occasionally intermixed with Alaskan Cedar and scattered Pacific Silver Fir, and often set amid open subalpine meadows or "alpine parkland." The summit of the Cascade rim is only a few hundred feet above these meadows and parklands, and the boundary between subalpine and true alpine, the timberline, is often characterized by the presence of dwarfed conifers or krummholz, much as in the Alps and other mountain ranges of the world. Heather meadows can be expected in the wetter areas, along with black sedge, mountain heliotrope, and Alaskan spirea. On the uppermost alpine ridges, the terrain is stony (called fellfields in other parts of the world), plant cover is sparse, and only a few species find footholds in this extreme habitat. Few animals are year-long residents of these habitats—the conditions are so extreme during the long Cascade winters.

The Cascades Ecoregion



The Cascades in east-central King County are home to birds such as gray jays in winter. Photo: Jennifer Vanderhoof.

To the south of Interstate 90, the Cascade Mountains take on characteristics quite distinct from the northern portion of the range. These southern mountains are bedded mainly on volcanic rocks rather than on the granitics that typify much of the northern North Cascades Region. Peaks along the crest are not so high, only reaching into the truly alpine at Blowout Mountain (1,732 meters; 5,680 feet) at the very eastern extreme of the upper Green River watershed. In King County, this larger Cascade Ecoregion includes the Western Cascade Lowlands and Valleys, the Western Cascades Montane Highlands, and the very limited Western Cascades sub-alpine/alpine subregion.

In King County, the Western Cascade Lowlands and Valleys subregion is dominated by three river systems: the Cedar River, which penetrates along the northern edge of the Cascade ecoregion; the Green River in the central portion; and the White River, which marks the boundary between King County and Pierce County, to the south. The subregion extends to the northeast for approximately 25 kilometers (15 miles), along a broad, glacial meltwater-formed valley that penetrates the Puget Uplands. This valley links the Puget Lowlands to the Cascade Highlands. According to certain historical accounts, this “thumb” was a major corridor for both human and animal travelers between the two regions. Because of their proximity to Seattle and other settled areas of Central Puget Sound, these valleys were among

the first to be logged and the first to be converted to agriculture in their lower reaches; logging and agriculture continue here today.

The Western Cascade Montane Highlands are also dominated by timber harvest. Most of the lands in this ecoregion are in private ownership, except for the Cedar River Watershed and the Tacoma Watershed lands. A patchwork of clearcuts and reforested areas characterizes this landscape, and all but the steepest and most inaccessible areas are traversed by forest roads. The legacy of forest management is considerable landscape fragmentation and a forest cover that is predominantly in early to mid seral stages (less than 75 years old); less than 10 percent of the ecoregion is in a late seral stage (old growth). Many of the existing late seral forest stands tend to be located in riparian areas of headwater streams or areas on very steep slopes. Much of the riparian corridor was harvested during the original timber harvest in the 1880s or burned in fires at the turn of the century. This patchwork of forest and riparian harvest has almost certainly altered the distribution and abundance of many forest dwelling birds and mammals.

The Western Cascades Subalpine/Alpine subregion occupies only about 2.5 square kilometers (1 square mile) in King County, mostly on the slopes of Blowout Mountain (at 1,732 meters, 5,680 feet ASL). This area differs little from the subalpine areas of the North Cascades in vegetation and animal species.



Gray Jays are a gregarious species found in mature, humid, sub-alpine, spruce forests. They are most often found from 1,000 meters and above to the tree line. Photo: Jennifer Vanderhoof.

The Marine Environment of King County



Sandy beach in an undeveloped portion of King County on rural Vashon Island. Photo: Kim Stark.

Western King County borders on Puget Sound, the long, relatively narrow body of salt water connected to the NE Pacific Ocean by the Strait of Juan de Fuca. The boundary of the County lies midway across the Sound, shared with Kitsap County to the west. The portion of the Sound that is within King County contains four major marine habitats: backshore, intertidal and shallow subtidal, deep subtidal, and riverine/sub-estuarine habitats. Backshore habitats are those areas of shoreline lying between terrestrial vegetation and the average high-tide line, which is affected by waves only during severe storms; intertidal and shallow subtidal habitats includes rocky and soft bottom substrates that extend from the average high-tide line down to a depth where benthic aquatic plants are no longer found; deep subtidal habitat extends from the limit of the photic zone (the depth where there is sufficient light to support photosynthesis) down to the deepest depth in Puget Sound (268 meters, 879 feet, off of Point Jefferson). Most of King County's portion of Puget Sound is this deep subtidal habitat. Riverine/sub-estuarine habitats are the areas where rivers or streams meet Puget Sound, and this meeting results in a mixture of salt and fresh water.

The effects of development and other human activities have been the greatest in the backshore and estuarine habitats of this environment. The construction of harbors and industrial areas has taken its toll on the largest

estuarine area of the County—the Duwamish River estuary. Once a complex of mudflats and wetlands of about 1400 acres at the turn of the 20th century, the estuary has been reduced to approximately 28 acres. All along developed waterfronts, shoreworks have been put in place to protect residences and commercial and industrial areas. Historically there were large coastal wetland complexes (salt marshes) throughout Puget Sound and along the King County marine shoreline. The Central Puget Sound area, where King County is located, has had the highest loss of wetland complexes, with less than 30 percent of the historic wetlands still remaining today. The largest tidal marshes within King County, once found within the Duwamish River mouth and Elliot Bay, were almost entirely filled and developed over the past 100 years. Of the remaining marine wetland complexes in King County, over 60 percent occur on Vashon and Maury Islands; the remaining 40 percent on the mainland shoreline have been highly altered, whereas the wetland complexes on Vashon-Maury Island have not been as severely affected. There remain a few natural areas and local parks along the mainland shore of the County but the majority of natural shoreline is found on Vashon-Maury Island.

Still, the intertidal, subtidal and deepwater habitats of the Sound are rich in plant and animal life. Over 150 species of benthic marine plants (those attached to the bottom) have been documented in King County. Seagrass, one of the most important marine plants in Puget Sound, is common but intermittent along most of the shoreline, and there are continuous seagrass meadows along portions of Vashon Island. Over 500 invertebrate species have been documented in King County's intertidal habitat. One of these, the Geoduck (pronounced "gooey-duck"), is the largest intertidal clam in the world. Commercially important invertebrates such as Dungeness crabs and butter clams are also found here.

More than 60 species of marine fish use the intertidal and shallow subtidal habitats in King County. This habitat is particularly important for juvenile salmon and for three species of forage fish (surf smelt, sand lance, and Pacific herring). Puget Sound, including King County, is home to the giant Pacific octopus, the largest octopus in the world, and to the giant acorn barnacle, the largest barnacle in the world. Over 150 marine fish

use deep subtidal areas, including rockfish, adult forage fish, flatfish, and sharks.

More than 100 marine bird species are found in Puget Sound and 9 species of marine mammals can also be observed in King County. The Stellar sea lion, harbor seal, and Dall's porpoise may be seen year-round, whereas the California sea lion, gray whale, and killer whale are seasonal visitors.

THREATS TO BIODIVERSITY IN KING COUNTY

Throughout the world, biodiversity is threatened by the many effects of increasing human populations, and King County is no different. The biggest threats visible today in King County are urbanization and residential development, invasive plant and animal species, and climate change. The effects of climate change are beginning to be observed in the county, although its full impacts are only beginning to be understood and are presumed to increase over time. Diseases that affect native vegetation are also a threat and may increase with climate warming. Finally, pollution from various sources threatens some species, particularly marine species. The county has experienced and continues to experience the alteration of genetic and species diversity that reflect the modification of natural habitats and alterations to the landscape.



King County's Noxious Weed Control Program focuses on prevention, education and technical assistance to combat local noxious weeds. Here staff remove garden loosestrife along the Raging River.



A native to the eastern half of North America, it is believed that the fragrant waterlily was introduced into Washington during the Alaska Pacific Yukon Exposition held in Seattle in the late 1800s. Northwest property owners have introduced this non-native plant into many King County lakes. Left unmanaged, waterlilies will form dense mats that out-compete native plants, reduce water quality, alter predator-prey relationships in lakes, and reduce biodiversity and alter food webs. Photo: Jennifer Vanderhoof.

Because the time that has elapsed since Euro-American settlement has been relatively short, certain elements of King County's biodiversity have not suffered as dramatically as might be expected from the density and extent of observable landscape change. Moreover, the loss of biodiversity is not evenly distributed across the County. Many attributes of landscape and habitat biodiversity in the lowlands have been grossly altered, and species that are dependent on these landscapes and habitats exhibit signs of decline, some severe; other areas, farther from the center of population, remain largely intact.

Management of Biodiversity in King County

King County has two general goals for biodiversity: (1) Protection of existing elements of biodiversity, and (2) the restoration and recovery of elements that have been harmed by human interference. The accomplishment of those goals depends on multiple approaches. King County's biodiversity goals tend to be developed from the County's own perspective and have not been consciously embedded in regional or national biodiversity goals. The State of Washington is developing biodiversity objectives and the County will attempt to nest its biodiversity goals within the larger State effort.

The County protects elements of biodiversity in two basic ways: through regulatory tools and through direct ownership and non-regulatory programs. There are four regulatory tools: the zoning code that establishes



Kanaskat Reach of the Green River. King County, with assistance from WRIA 9, has preserved almost 200 acres of this reach in the last five years for fish and wildlife habitat protection, and to facilitate future ecological restoration projects. Photo: Josh Kahan.

acceptable land uses and three complementary development ordinances.

The County zoning code is a potentially useful management tool for biodiversity protection, although it has been used only weakly for that purpose. The establishment of land uses that are compatible with the protection and recovery of biodiversity could be made more explicit but the current zoning still has some clear benefits for biodiversity. This benefit is a result of the intentional thinning of development intensity as one travels from the urban lowlands eastward toward the Cascade foothills. The gradient of development intensity generally declines eastward, and native habitats remain in a land cover setting that is more conducive to their function.

King County's regulatory framework includes the Critical Areas Ordinance (CAO), Stormwater Ordinance (SO), and Clearing and Grading Ordinance (CGO). The CAO uses a buffer system to protect an array of environmentally sensitive habitats: streams, wetlands, lakes, and certain wildlife habitats. Furthermore, the CAO also requires buffers on steep slopes, easily eroded areas and near river channel migration zones, among other sensitive areas. The Stormwater Ordinance prevents hydrological and water quality impacts by specifying the allowable discharge from newly developed areas into streams, lakes, and wetlands. This ordinance also specifies pollution controls based on best management

practices. The Clearing and Grading Ordinance places limits on clearing, for new development. This CGO use a sliding scale of allowable clearing: as lot size increases, the relative percentage of clearing allowed on a site declines.

The County also uses land acquisition and easement acquisition as tools for biodiversity protection although this has not always been the primary intent of the acquisitions. In the last decade, however, programs have been developed that target lands expressly for their ecological value—biodiversity among them. At this time, the County has some 2,428 hectares (6,000 acres) in its ecological lands inventory.